USSR

UDC 576.858.75.098.396.332

VLADIMIRTSEVA, Ye. A., BUKRINSKAYA, A. G., and ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Sciences, Moscow

"Replicative Complexes of Sendai Virus"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, pp 402-406

Abstract: This study was performed to verify the hypothesis that Sendai virus has two replicative complexes: one operating in the nucleolus and synthesizing viral RNA, and the other operating in cytoplasm and synthesizing complementary RNA threads. The tests were performed with Sendai virus strain No 960, which was incubated with Erlich ascites carcinoma cells to which radioactive precursors of RNA were added. Subsequent analysis revealed that the nuclear fraction as well as the cytoplasmic fraction contained both bypes of RNA, suggesting that the replicative complexes were located in both parts of the cell. It was concluded that additional tests must be performed by different methods in order to resolve this problem conclusively.

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USSR UDC 576.858.5.083.35;616-006.6.018]:675.8.095.383.098.396.332

ZAYDES, V. M., VOLKOVA, M. Ya., and BUKRINSKAYA, A. G., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Virus-Induced RNA in Polyribosomes of Ehrlich Ascites Carcinoma Cells Infected With Sendai Virus"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 70, pp 518-524

Abstract: After inoculation of Ehrlich ascites carcinoma cells with Sendai virus, virus-induced RNA was detected in pre-ribosome and post-ribosome zones of the sucrose gradient. The structures in the pre-ribosome zone was identified as virus-specific polyribosomes. Analysis in CsCl density gradient indicated that the polyribosomes occupy the rho = 1.51 g/cm^3 position. Viral polyribosomes were sensitive to an Mg^{2+} deficiency in solution. When treated with a buffer solution containing a low Mg^{2+} concentration, polyribosome sedimented at a low rate during analysis in the sucrose density gradient. The virus-induced polyribosome RNA consisted primarily of 18S RNA and an RNA which sedimented in the heterogeneous zone at a greater rate. The 18S RNA was present in polyribosomes with a low sedimentation constant (110-170 S).
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USSR UDC 576.858

ZAYDES, V. M., ZASLAVSKIY, V. G., KAVERIN, N. V., BUKRINSKAYA, A. G., and VOLKOVA, M. Ya. Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Virus-Specific Informosome-Like Component in Cell Extracts Infected With Newcastle Disease Virus"

Moscow, Molekulyarnaya Biologiya, Vol 4, No 4, Jul/Aug 70, pp 607-611

Abstract: Slowly sedimenting structures in cytoplasmatic extracts of a culture of chick embryo cells infected with Newcastle disease virus were detected and characterized. These structures (an informosome-like component) contain a virus-induced RNA with a sedimentation coefficient of 45S; they separate in the density gradient of cesium chloride in the rho=1.43g/ml zone. The RNA of the informosome-like component is complementary to the RNA of the mature virus whose sedimentation coefficient is 18S. The data obtained are discussed in relation to the possible role of the informosome-like component in paramyxovirus reproduction.

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USSR UDC 576.858.75.098.396.332

ZHDANOV, V. M., BUKRINSKAYA, A. G., AND SITO, A. F., Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"Characteristics of Sendai Virus RNA as Studied in Polyacrylamide Gels"

Moscow, Voprosy Virusologii, No 1, Jan/Feb 71, pp 77-81

Abstract: Viral and virus-induced RNA of Sendai virus (strain No 960) was studied by electrophoresis in polyacrylamide gels. Labeling with H^3 - or C^{14} -uridine was used to evaluate the molecular weights of various RNA forms. Close to 10 RNA forms (molecular weights ranging from 170,000 to 12,000,000) were discovered in cells which had been infected by Sendai virus. Among these were a newly formed viral RNA, a replicative form, a replicative intermediate form as well as RNA (molecular weight of the order of 8,500,000) occupying an intermediate position between the viral and the replicative form. Several RNAs with molecular weights below that of viral RNA were found. It is pointed out that some of the gel fractions reported may consist of impure materials or of degradation products.

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USSR UDC 576.858.5.095.6

ZHDANOV, V. M. and BUKRINSKAYA, A. G.

Reproduktsiya Miksovirusov, Virusov Grippa i Skhodnykh s Nimi, (Reproduction of Myxoviruses. Influenza and Influenza-Like Viruses

Moscow, "Meditsina", 280 pp

Translation: Annotation: Achievements in molecular biology have spurred the rapid development of general virology, the most urgent problem of which is the study of intracellular replication of viruses. Among the RNA-containing viruses, replication of myxoviruses is least explored and therefore has become the object of intense investigation in recent years. As a result, numerous formerly unclear questions have been explained. In addition, problems demanding further work have arisen. The book presents modern concepts of the mechanism of myxovirus replication. Two introductory chapters of the book deal with problems of myxovirus classification, a brief background treatment of myxoviruses, their structure, composition, and physicochemical properties. A section on inhibitors of nucleic and protein metabolism supplements the presentation of the main material in the book, which is taken up in the following order.

1. Adsorption of viruses on cell surfaces.

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ZHDANOV, V. M., et al, "Meditsina", 280 pp

2. Penetration of virus particles into cells.
3. Deproteinization of virus particles; release of viral nucleic acid and its transport to the site of replication of viral RNA
4. Preparatory (early) virus-induced syntheses.
5. Synthesis of viral nucleic acid.
6. Synthesis of structural proteins.
7. Formation of mature virus particles and their exit from cells.

Because the subject literature contains no generalizations of accumulated material on myxovirus replication, the book will be of interest for virologists working in this field.

Table of Contents:

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USSR

ZHDANOV, V. M., et al, "Meditsina", 280 pp

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B

Acc. Nr.: AP0031143 Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol 69, Nr 1, pp 85-88

MITOTIC CHANGES OF RES CULTURES (CLONE 1) INFECTED THE SENDAI VIRUS

V. N. Blyumkin, L. A. Monastyreva, A. G. Bukrinskaya

D. I. Ivanovsky Institute of Virusology, Academy of Medical Sciences of the U. S. S. R. Moscow

RES cultures (clone 1) were infected by Sendai virus, strain No. 960. In this cellular system the virus multiplied with development of cytopathic changes: symplastoformation and destruction of a cellular layer. At early stages of infection a considerable number of cells appeared containing micronuclei. Increase of mitotic activity after infection is replaced by its depression as infection develops. Increase of pathological mitoses in infected cultures is possibly one of early manifestations of a cytopathic action of Sendai virus.

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REEL/FRAME

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USSR UDC 616-018.15-092.9-02:576.858.75 (Sendai)

BLYUMKIN, V. N., MONASTYREVA, L. A., and BUKRINSKAYA, A. G., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Mitotic Changes in RES Cultures (CLone I) Infected with Sendai Virus"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 1, 1970, pp 85-88

Abstract: RES cultures (clone I) infected with Sendai virus (strain 960) exhibited peculiar quantitative and qualitative mitotic changes. Within two hours of infection, mitotic activity increased simultaneously with intranuclear synthesis of virus-specific RNA. A wave of pathological mitoses appeared after 4-6 hours. The chromosomes, spindles, and centrioles were severely damaged and many of the cells contained micronuclei. These pathological mitoses are interpreted as an early manifestation of the cytopathic effect of Sendai virus on the cellular system under study.

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B

USSR

UDC 576.858

BUKRINSKAYA, A. G. and ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Formation of Virus-Specific Polysomes in the Early State of Infection with Paramyxovirus"

Moscow, Molekulyarnaya Biologiya, No 3, 1970, pp 313-323

Abstract: The participation of viral ribonucleoprotein in the formation of virus-specific polysomes in Ehrlich's ascites tumor cells infected with Sendai virus was studied. Following infection of the cells with $Na_2H^{32}PO_4$- and H3-leucine-labeled virus, centrifugation of the cell extracts in a sucrose density gradient showed that viral ribonucleoprotein remained in the cytoplasm for at least 6 hours after infection, during which time it became partly deproteinized. Some viral ribonucleoprotein was found an hour after infection, and thereafter in complexes with protein-synthesizing ribosomes. These complexes were sensitive to ribonuclease and EDTA, and sedimented when treated with immune antiviral serum. Centrifugation in a preformed CsCl gradient showed that the complexes have a buoyancy density of 1.45 and 1.41 g/cm^3. Newly synthesized virus-specific RNA was also found near the polysomes 3 hours after infection. Its distribution in

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BUKRINSKAYA, A. G., et al, Molekulyarnaya Biologiya, No 3, 1970, pp 313-323

the sucrose density gradient coincided with the distribution of radioactivity of the parent virus, but diverged in later stages of infection.

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1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--FORMATION OF THE VIRUS SPECIFIC POLYSOMES AT AN EARLY STAGE OF PARAMYXOVIRUS INFECTION -U-

AUTHOR-(02)-BUKRINSKAYA, A.G., ZHDANOV, V.M.

B

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3 PP 313-323

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MYXOVIRUS, RIBOSOME, PROTEIN, RNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

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UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVOLVEMENT OF A VIRAL RIBONUCLEOPROTEIN IN VIRUS SPECIFIC FORMATION WAS STUDIED IN EHRLICH ASCITES CELLS INFECTED BY SENDAI VIRUS. VIRUS BEING BEFOREHAND LABELLED WITH NA SUB2 H PRIME32 PO SUB4 AND PRIME3 H LEUCINE, CENTRIFUGATION OF THE CELL EXTRACTS IN SUCROSE DENSITY GRADIENT REVEALED THE PRESENCE OF THE VIRUS RIBONUCLEOPROTEIN IN CYTOPLASM DURING AT LEAST 6 HOURS AFTER INFECTION. IN THE COURSE OF INFECTION DEPROTENIZATION OF THE RNP TAKES PLACE. A PART OF THE VIRUS RNP IS FOUND TO BE BOUND TO PROTEIN SYNTHESIZING RIBOSOMES IN AN HOUR AFTER INFECTION OR LATER. THE COMPLEXES RNP, RIBOSOMES WERE SENSITIVE TO RIBONUCLEASE AND EDTA TRAEATMENT AND SEDIMENTED FASTER AFTER IMMUNE ANTIVIRAL SERUM TREATMENT. BEING CENTRIFUGATED IN A PREFORMED CXCL DENSITY GRADIENT, THE COMPLEXES WERE SHOWN TO HAVE BUOYANT DENSITY 1.45 AND 1.41 G-CM PRIME3. NEWLY SYNTHESIZED VIRUS SPECIFIC RNA IS FOUND ALSO IN TH EPOLYSOME ZONE IN 3 HOURS AFTER INFECTION, ITS DISTRIBUTION IN SUCROSE DENSITY GRADIENT COINCIDING WITH THE DISTRIBUTION OF THE PARENT VIRUS RADIOACTIVITY. ON THE LATER STAGES OF INFECTION THE COINCIDENCE MENTIONED ABOVE DOES DISAPPEAR. FACILITY: INSTITUTE OF VIROLOGY, ACADEMY OF MEDICAL SCIENCES, USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 620.1:621.315.61.01:537.226

PETROV, V. M., KRYNETSKAYA, S. A., BUKSHTAM, B. M. (Moscow Institute of Steel and Alloys)

"Measurement of SHF Permittivity of (Ba, Sr)RiO_3 Paraelectrics in Transverse Bias Fields"

Tomsk, Izvestiya VUZ Fizika (News of the Higher Educational Institutions, Physics), No 9(112), 1971, pp 20-25

Abstract: An instrument is described that has been developed for measuring the SHF permittivity by the dielectric resonance method. A cylindrical sample is placed within the concentrated portion of a magnetic field in a waveguide. Resonance is detected by a probe placed at the trough of the standing waves. The dielectric resonance points are crossed by changing the temperature and dielectric permittivity of the samples. A diagram of the experimental equipment is shown.

The tangent of the loss angle and permittivity of the ceramic $BaTiO_3$ and of solid, paraelectric phase solutions of $BaTiO_3$ and $SrTiO_3$ were measured in the 10-cm range at temperatures above the Curie point, both with and without the transverse bias field.
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PETROV, V. M. et al, Izvestiya VUZ Fizika, No 9(112), 1971, pp 20-25

It was found that a transverse field decreases the permittivity of the samples, but to a lesser degree than a longitudinal field. It is suggested that the dielectric nonlinearity mechanism in paraelectrics is due principally to the saturation of the electron-ion polarization and not to the field orientation of the domains remaining above the Curie point.

Orig. art. has 4 figs. and 15 refs.

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1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--IMPEDANCE OF THE CHLORINE ELECTRODE IN FUSED SALTS -U-

AUTHOR-(03)-LEUNOVA, L.S., UKSHE, YE.A., BUKUN, N.G.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(2), 249-52

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINE, ELECTRODE, GRAPHITE ELECTRODE, ELECTROLYTIC OXIDATION, FUSED SALT, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0461 STEP NO--UR/0364/70/006/002/0249/0252

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2/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0107067

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE ELECTROCHEM. OXION. ON GRAPHITE ELECTRODES OF CL DISSOLVED IN MOLTEN SALTS WAS INVESTIGATED. THE IMPEDANCE OF A GRAPHITE ELECTRODE IN CL SATD. MELTS OF NACL, KCL, RBCL, AND CSCL AND IN AN EQUIMOLAR NACL-KCL MIXT. WAS MEASURED AT TEMPS. FROM THE SALT M.P. TO 900DEGREES. FREQUENCIES OF 500 HZ TO 50-90 KHZ WERE USED. EXPTL. RESULTS AND CALCD. DATA WERE IN GOOD AGREEMENT. THE CONCENTRATIONAL IMPEDANCE DEPENDS EXCLUSIVELY ON THE DISSOLVED MOL. CL DIFFUSION. THE RESULTS OBTAINED DO NOT CONTRADICT, IN PRINCIPLE, THE CONCEPT RELATIVE TO THE INHIBITION OF ADSORBED CL ATOM RECOMBINATION; HOWEVER, THEY CANNOT PROVIDE POS. EVIDENCE OF SUCH A COURSE OF THE PROCESS MECHANISM. FACILITY: INST. NOVYKH KHIM. PROBL., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 551.573

BUKZDORF, N. V., Institute of Optics of the Atmosphere, Siberian Department of the Soviet Academy of Sciences

"Calculation of the Intensity of an Electromagnetic Field Inside a Transparent Dielectric Medium"

Tomsk, Izvestiya VUZov: Fizika, No 3(130), 1973, pp 114-116

Abstract: Solution of the problem of distribution of intensity inside a drop exposed to optical radiation is a necessary stage in the complete analysis of the pattern of physical phenomena in a drop under the effect of a giant laser pulse. The author calculates the field intensity throughout the entire volume of a transparent particle. Since the field in the vicinity of the drop differs appreciably from a plane wave, both the electric and magnetic vectors must be known to calculate the intensity. The results of computer calculations are given for the radial distribution of relative intensity of light in drops of different sizes. The author thanks A. V. Kuzikovskiy for constructive discussion of the results.

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USSR

BUL', P., Dr. Med. Sci.

"Hypnosis: Legneds and Facts"

Moscow, Nedelya, 23-29 Jul 73, p 16

Abstract: Hypnotists are often compared to magicians. However, science has shown that anyone can be a hypnotist, and a physician certainly should be one. At the present time, the nature of hypnosis is being investigated at our medical institutes.

A profound materialistic theory of the complex and fascinating phenomenon of hyposis has been proposed by our scientists V. M. Bechterev, I. P. Pavlov, and K. I. Platonov.

Hypnosis is partial sleep in which not all of the cortex is inhibited, but only certain regions. After the certain period of time, if the hypnotized subject is left to himself, the process of inhibition will encompass adjacent cortical regions of the cerebral hemispheres, and when "inhibition" has affected the entire cortex, hypnosis is transformed into ordinary sleep. It is evident then, that hypnosis is a variant of common sleep which is artificially induced with the assistance of special methods.
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BUL', P., Nedelya, 23-29 Jul 73, p 16

In olden times, when little was known about hypnosis, much attention was given to "animal magnetism" and hypnotists held a magnet in their hand since they believed in this miraculous power. Later, however, and interesting incident occurred. An Austrain physician, A. Mesmer, came to visit a female patient and discovered that he had forgotten his magnet. He did not wish to disappoint the patient and pretended that the magnet was in his hand; as was the practice in those days, he started to pass his hand over the patient. Soon, to his amazement, the patient became hypnotized without the assistance of a magnet.

Similarly, for a long period of time the same convictions applied to the eye color of the hypnotist. It has since been shown that in hypnosis it is not even necessary to look into the eyes. It is enough to have the subjects gaze on a nickel plated metal, ball, a medical mallet, or some other bright object. The neurons of the visual apparatus tire under this exertion. As a result, in those regions of the cerebral cortex a protective inhibition sets in and spreads over the cerebral cortex and, as a result of this hypnosis sets in. Consequently, it can be approached that the eyes of the hypnotists do not play the dominant role ascribed to them previously, nor do they possess any secret powers.

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BUL', P., Nedelya, 23-29 Jul 73, p 16

Why are all of the orders of a hypnotist carried out accurately by the hypnotized subject?

It has been found that in the hypnotized subject there is exclusion (inhibition) of those regions of the cerebral cortex which perform "critique" functions (thought analysis). In natural sleep a person may dream that he is a small child and that he is being punished unfairly; he believes his dream and sheds bitter tears and , on waking discovers them of his cheeks. A hypnotized person may be told that he is in a state of pain, and he will also cry.

It is possible to introduce various illusions and hallucinations in a subject in deep hypnosis. Interesting results were obtained with subjects with suggestions of burns. The experiment was performed in the following manner: any type of a cold object was brought to the hand of the subject, but the subject was told that it was a hot iron rod. "I am burning you" the hypnotist suggested convincingly. The subject cried out from pain, turned pale, and perspiration covered his forehead. Furthermore, at the point of application of the object the region turned red and a blister appeared containing tissue fluids. This is a sign of a second degree burn.

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BUL', P., Nedelya, 23-29 Jul 73, p 16

If a hypnotized subject is hit with a rolled up newspaper but is told that he was hit was a cane a bruise appears some time later.

A question that is frequently asked pertains as to who is a better subject for hypnosis. According to hypnotists of the last century and present day specialists, it is believed that twenty-five % of the people are especially susceptible to hypnotization. They become deeply hypnotized very rapidly, almost instantaneously. Susceptibility to hypnosis is age-dependent. Children between the ages of five and 15 are especially susceptible. Very old people are very difficult to hypnotize. In general, however, 95 percent of the people can be hypnotized.

Susceptibility to hypnosis depends on the type of nervous system that an individual possesses. The artistic type, the person who thinks in terms of concrete visual images, are sensitive and emotional; they are imaginative and susceptible to deep hypnosis.

The deep thinkers think abstractly and are "distant." They evidence a tendency to self-analysis and self-criticism (sometimes excessive) and scepticism. As a rule they are poor subjects for hypnosis.

In addition, there are people of the mixed type. Depending on the characteristics which predominate we may hazard a guess as to the extent to which they are susceptible to hypnosis.

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BUL'P., Nedelya, 23-29 Jul 73, p 16

Is it possible to hypnotize a man if he does not want to be hypnotized? It is possible, but it is difficult. The well-known French hypnotist A. Forel has described the following experiment. Two hypnotists argued as to which of them was more "powerful," and entered into what could be called a duel. For many hours they sat in front of each other and stared at each other and, finally, one of them fell asleep. The duel terminated in the victory of the man more experienced and less susceptible to inhibition.

Can hypnosis be used for criminal purposes ? This question also arises. The current state of knowledge gives a negative answer. Even in the last century jurists, psychiatrists, and hypnotists conducted many experiments which demonstrated that assumptions and legends of criminal activities under the influence of hypnosis are merely fantasies of philistines and the bourgeois press with its tendency for sensationalism. Such experiments have been conducted in many countries abroad and have shown that criminal activity under the influence of hypnosis is impossible.

There is, in addition, a certain overestimation of the curative possibilities of hypnotism (hypnotherapy). Certain people regard hypnosis as almost being a panacea for all diseases. In fact, this is definitely not

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BIL', P., Nedelya, 23-29 Jul 73, p 16

the case. There is no doubt that hypnosis is of great aid in the effective treatment of many functional and some organic diseases. However, in any serious discussion the use of hypnosis must be the decision of the physician and not the patient or his family. This will avoid disenchantment and discreditation of this highly effective form of treatment.

What kind of diseases may be treated by hypnosis? For the main part functional disturbances in the nervous system and functional malfunctioning of internal organs. Under shock or a severe disturbance certain centers in the cortical regions may become temporarily inhibited and result in, let us say, functional paralysis or blindness. In these cases careful neurological workup will not indicate any organic (anatomical) lesions. After a period of rest or treatment with hypnosis or some other medical means the function recovers.

However, if the paralysis or blindness has an organic basis, then hypnosis is ineffective and should not be attempted. The layman, of course, cannot distinguish between those cases. It was on the basis of this that clergymen frequently speculated and performed their "miracles."

A rapid cure of functional blindness can be illustrated by one of my own cases. A woman was brought to the polyclinic who had witnessed an accident involving her husband. The shock was so severe that the nerve cells

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BUL', P., Nedelya, 23-29 Jul 73, p 16

of the visual apparatus could not stand such an "overload" and "shut themselves off." The woman was blind in both eyes. This state lasted for over a year and a half. Physicians assured her that everything was in order with her eyes and that her disease could ascribed to her "nerves."

Knowing that such people are highly susceptible to hypnosis, I suddenly cried out "Sleep!" and the woman immediately fell into a deep hypnotic state; I suggested to her that at the count of five she would wake up and be able to see again. And do I counted, "one, two, three, four, five, Wake Up! You can see!" With a cry of "I can see" the patient rushed out of the office and inadvertently scared some of the patients in the admission room.

Why can't this be regarded as a miraculous cure? Many physicians, psychotherapists, know of similar instances from their own pratice and none of them think of this as something miraculous.

Hypnotic therapy has been very successful in insomnia and some skin conditions. Results obtained in cases of various forms of bronchial asthma, hypertension, and ulcers have also been good.

Hypnosis has also been useful in treating pain. It has been found that in a subject in deep hypnosis sensitivity to pain is greatly weakened or completely abolished. On the basis of this hypnosis has been used in some surgical procedures in which anesthesia was contraindicated. It must be admitted

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BUL', P., Nedelya, 23-29 Jul 73, p 16

nevertheless, that hypnosis will never replace anesthesia in surgery and can only be effective in certain cases; surgical intervention requires a very deep state of hypnosis and the latter can be induced in only limited number of individuals.

In France and the US hypnosis has been successfully used in the treatment of obesity. We have also employed this method. It has been demonstrated that suggestion can reduce appetite. In several cases it has been possible to get a weight loss of 7 to 8 kilograms. Not infrequently the opposite is achieved; a malnourished individual may have his appetite improved and general state also.

Hypnosis may also be used in the treatment of alcoholics. However, they rarely seek medical attention and see a physician only because their family or society force them to. Completely different results are obtained in those cases in which the patient wants treatment and actively seeks it. Treatment of these patients is recommended and is carried out at special stations and not on an ambulatory basis.

Hypnotists have also obtained interesting results in sports. They are able to relatively easily cure "starting fever" which frequently affects even accomplished athletes (this phenomenon lowers their achievements). I

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BUL',P., Nedelya, 23-29 Jul 73 , p 16

have personally been successful in eliminating fear in boxers and their performance in the ring was more positive. Hypnosis is also an effective means for eliminating uncertainty in young parachutists on their first jump.

In the US experiments are being conducted on eliminating a feeling of weightiness in astronauts at the moment when the rocket is fired. Contact is maintained with the hypnotized astronaut by means of radio or television.

Together with my colleague A. I. Naumenko, I frequently hypnotized patients with bronchial asthma who were in a barochamber at an "altitude" of 4 to 5 thousand meters via television. We saw the face and position of the patient and heard his voice, and the subjects in turn heard the voice of the physician who hypnotized him.

Both practice and theoretical studies have shown that even greater potential can be realized with hypnosis and that this phenomenon deserves careful attention. It must be evaluated in a clear-thinking fashion.

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BUL', P., Professor

"Hypnotherapy of Chronic Alcoholism"

Moscow, Meditsinskaya Gazeta, 1 Sep 72, p 3

Translation: The decisions of the party and the government and the decree of the Presidium of the Supreme Soviet RSFSR on measures to control alcoholism set a very important and responsible task for medicine. We believe that, in order to solve it successfully, we must establish as soon as possible special infirmaries where narcologists and psychoterapists could treat chronic alcoholics effectively. After all, there are many capable people with the most varied specialties among them. Can medical science at this level help them effectively?

As long as the last century academician V. M. Bekhterev successfully used hypnosuggestive therapy for treating this pathology in special hospitals where he held very successful group hypnosis sessions with chronic alcoholics. Therapy schemes combining hypnosis and the prescription of apomorphine for forming stable reflexes of aversion to and intolerance of alcohol have now been developed. Psychiatrists successfully use antabuse and other pharmacologic agents.

We have also often used hypnosuggestive therapy for treating chronic alcoholics in the hospital therapy clinic of the First Leningrad Medical

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BUL', O., Meditsinskaya Gazeta, 1 Sep 72, p 3

Institute imeni I. P. Pavlov. We got the impression that ambulatory treatment is effective in only 25 to 30% of the alcoholics. This is due to the fact that often they do not want to be treated and go to a hypnosis clinic (gipnotariy -- hypnotarium) only under compulsion by their relatives or public organizations. If, however, the patient realized the need for treatment and came to us on his own initiative, the effectiveness increased to 35-40%. This points to an absolute need for health education work among wide sections of the public.

When conducting hypnosuggestive psychotherapy, one must take into consideration that usually alcoholics are easily suggestible and quickly enter into a state of hypnosis.

However, do we have enough physicians who are able to use this good method of treatment? Unfortunately, the answer is negative.

I am fighting for hypnosuggestive therapy and other combined measures proposed by the country's well-known psychotherapists, because I have seen their benefits in my own clinical experience. About 30 alcoholics have been treated in our modest, poorly equipped hypnosis clinic in the last 5 years. Twenty-five alcoholics gave up alcohol completely. Remote results over a period of 2 to 3 years showed that 23 people had no relapses and in two people the effect of the treatment lasted only 1 year.

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BUL, P., Meditsinskaya Gazeta, 1 Sep 72, p 3

If we were able to obtain such encouraging results even in a room unsuitable for hypnotherapy and electronarcosis, then in special hospitals and infirmaries much more could be obtained.

Perhaps we should discuss the problem of establishing such specialized hospitals in the system of autonomously financed medical institutions?

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USSR

UDC 621.374

BUL', V. A.

"Electronic Circuits for Controlling Optoelectronic Polarization Switches"

Kiev, Izvestiya Vysshikh Uchebnykh Zavedeniy, Radioelektronika, Vol XIV, No 6, 1971, pp 648-656

Abstract: A study is made of the high-voltage control voltage shaping circuit for optoelectronic polarization switches used for modulation and deflection of monochromatic light emission. The theoretical basis for the shaping circuits and schematics of a trigger circuit with electron tubes and thyratrons, a switching circuit with a β-reduction circuit, a sinusoidal shaping circuit with commutation in the secondary transformer circuit, and a shaping circuit with commutation of the excitation phase are presented. The best energy characteristics were found for the sinusoidal shaping circuit with commutation in the secondary transformer circuit which is a version of the circuit with mixed resonance [V. A. Shamburov, Radiotekhnika a Elektronika, Vol 15, No 3, 512, 1970]. With a higher off-duty factor of the light pulses it is possible to use a simpler shaping circuit with phase commutation in the primary transformer circuit. Some experimental results of testing various types of shaping circuits are presented.

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BULAKH, B.M.

RAN/ /R 460/5-AKN 73
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significant temperature drop and a density increase in comparison to the case of a perfect gas. The simultaneous effect of disequilibrium on pressure and, consequently, on the aerodynamic characteristics of the investigated bodies is slight. It was established that the gas composition near the body surface on the conical tail section becomes practically frozen.

Bulakh, B. M. Vortex interaction of a three-dimensional laminar boundary layer on a circular cone with external nonviscous supersonic flow. IN: Materialy nauchno-tekhnicheskoy konferentsii Leningradskogo instituta svyazi. Leningrad, no. 4, 1971, 146-147. (RZhMekh, 5/72, no. 5B329)

The velocity, pressure, density, and temperature components in a laminar boundary layer flowing around a cone at an angle of attack are represented in the form of expansions into a power series on the basis of the small parameter $\epsilon = R^{-\frac{1}{2}}$, where R is the Reynolds number. The initial terms of the expansions describe a self-similar solution to a problem of the boundary layer on the cone; the coefficients of the second term take into account the boundary layer interaction with a nonviscous eddy flow outside the boundary layer. Corrections to the solution associated with this interaction may in some instances be 10% or higher.

USSR

BULAKH, B. M., Leningrad

"A Type of Interaction of the Boundary Layer and the External (Nonviscous) Flow at Supersonic Velocities"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 35, No 4, 1971, pp 633-637

Abstract: A study was made of the problem of asymmetric stationary flow of a homogeneous supersonic viscous gas around a circular cone in the presence of large Reynolds numbers R. It has been demonstrated [Bulakh, Izv. AN SSSR, MZhG, No 1, 1971] that in many cases the solution of the problem of a nonviscous flow around a cone is such that the derivatives of the density (temperature) and component velocity of the gas particles tangent to the surface of the cone with respect to the normal to the surface of the cone go to infinity. In these cases, from the condition of conjugacy of the solution of the problem of nonviscous flow around a cone (which is considered as the first term of the asymptotic expansion of the solution of the complete problem with respect to powers of $\varepsilon = R^{-1/2}$ outside the boundary layer) to the solution of the problem in the boundary layer, it follows that additional terms appear in the last solution which can provide a significant correction to the results of the ordinary boundary layer theory. In the case of a laminar boundary layer, these

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USSR

BULAKH, B. M., Prikladnaya Matematika i Mekhanika, Vol 35, No 4, 1971, pp 633-637

Additional terms are self-similar, and a strict statement of the problem is given for determination of them.

The interaction of the nonviscous flow and the boundary layer is similar to vortex interaction at hypersonic velocities, but the cause of interaction there is sharp distortion of the forward shock whereas here there is no obvious simple physical cause for the occurrence of interaction of the nonviscous flow and the boundary layer. Accordingly, considering that the solution of the ordinary problem of the boundary layer for a circular cone is self-similar, the solution of the equation of state of the gas is found for the boundary layer region (outside the vicinity of the apex of the cone). The expansions of the solutions are substituted in the equations of state of the gas and the boundary conditions for the resultant systems of equations are obtained. This system of equations and the boundary conditions determine the solution of the Prandtl equations for the cone.

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U S S R BOOK 355

BULAKH, B. M. UDC 532.7

NELINEYNYYE KONICHESKIYE TECHENIYA GAZA (Nonlinear Conical Gas Flows), Moscow, "Nauka", 1970, 344 pp, illus, biblio (234 items), 3,500 copies printed

In the foreword, dated December 1967, the author states that, although the theory of nonlinear conical flows has been well developed in recent years on the basis of many research reports on all aspects of it for both supersonic and hypersonic velocities, no special book on the subject has been published in the USSR or abroad. This book is intended to fill that gap, but is not intended as a comprehensive reference book on nonlinear conical flow theory. The use of symbols is not consistent throughout the book. The book is the result of many years of work by the author, originally under the supervision of Saveliy Vladimirovich Fal'kovich. Of the 234 items in the bibliography, 144 are non-Soviet.

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USSR B UDC: 546.48'221:537.611.33

BULAKH, B.M., PEKAR', G.S., Institute of Semiconductors, Lengingrad, Academy of Sciences USSR

"Influence of Heat Treatment on Photoelectric Parameters of CdS single crystals"

Moscow, Neorganicheskiye Materialy, Vol 6, No 3, 1970, pp 553-555

Abstract: The influence of growth conditions and heat treatment of large CdS crystals gorwn by crystallization from the gas phase on their specific resistance and photosensitivity was studied. The crystals were grown in a device with a vertically moving furnace, which allows more even temperature fields to be produced and facilitates centering of the ampule relative to the furnace. The crystals were roasted under various conditions, including vacuum roasting, roasting under sulfur vapor pressure in a closed volume, roasting in an inert atmosphere with controlled sulful vapor pressure, roasting in a stream of inert gas, and roasting in CdS powder in a flowing inert atmosphere under sulfur vapor pressure. The crystals produced had ρ_t= 0.1-10 ohm·cm. The effects of the various roasting conditions on parameters of the crystals are discussed.

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1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF HEAT TREATMENT ON PHOTOELECTRIC PARAMETERS OF CADMIUM SULFIDE SINGLE CRYSTALS -U-

AUTHOR-(02)-BULAKH, B.M., PEKAR, G.S.

B

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 553-5

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CADMIUM SULFIDE, SINGLE CRYSTAL, SULFUR, RESISTIVITY, PHOTOELECTRIC PROPERTY, THERMAL EFFECT, VACUUM ANNEALING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0899 STEP NO--UR/0363/70/006/003/0553/0555

CIRC ACCESSION NO--AP0118068

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118068

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF GROWTH CONDITIONS AND THERMAL TREATMENT OF COARSE CDS CRYSTALS GROWN BY CRYSTN. FROM THE GAS PHASE ON THEIR ELEC. RESISTIVITY AND PHOTOSENSITIVITY WAS STUDIED. THE CDS SINGLE CRYSTALS GROWN WERE 18-20 MM IN DIAM. AND 50-60 MM IN LENGTH. THE CRYSTALS WERE ANNEALED UNDER VARIOUS CONDITIONS: IN VACUUM, UNDER S VAPOR PRESSURE IN A CLOSED VOL., AND IN AN INERT ATM. AT CONTROLLED PRESSURE OF THE S VAPOR. THE CDS CRYSTALS GROWN HAD AN ELEC. RESISTIVITY OF 0.1-10 OHM-CM. EXCESS CD INCLUSIONS WERE OBSD. IN THE (0001) PLANE. DURING ANNEALING OF THE CRYSTALS, WHICH INCREASES THE ELEC. RESISTIVITY OF THE SAMPLES, THERE TAKES PLACE A FILLING UP OF THE S VACANCIES AND A REMOVAL OF EXCESS CD FROM THE CRYSTALS. RESULTS OF ANNEALING UNDER VARIOUS CONDITIONS ARE DISCUSSED.

UNCLASSIFIED

1/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EQUATIONS OF THE THREE DIMENSIONAL LAMINAR BOUNDARY LAYER ON BODIES OF REVOLUTION -U-

AUTHOR-(02)-BULAKH, B.M., SIMKIN, M.S.

B

COUNTRY OF INFO--USSR

SOURCE--PRIKLADNAIA MATEMATIKA I MAKHANIKA, VOL. 34, JAN.-FEB. 1970, P. 145-149

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--BODY REVOLUTION, LAMINAR BOUNDARY LAYER, SUPERSONIC FLOW, GAS FLOW, BOUNDARY LAYER EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1447 STEP NO--UR/0040/70/000/034/0145/0149

CIRC ACCESSION NO--AP0106203

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200510012-8"

2/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0106203
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF UNIFORMLY ACCURATE EQUATIONS FOR THE THREE DIMENSIONAL LAMINAR BOUNDARY LAYER ON A BODY OF REVOLUTION PLACED AT AN ANGLE OF ATTACK IN A SUPERSONIC GAS FLOW. THE MOST SIGNIFICANT RESULT IS THAT THE PARAMETERS OF GAS FLOW IN THE BOUNDARY LAYER (NEAR THE REGION OF A SHARP BEND IN THE GENERATRIX) CAN BE DETERMINED INDEPENDENTLY IN EACH MERIDIONAL PLANE PASSING THROUGH THE BODY'S AXIS OF SYMMETRY IF THE RADIUS OF CURVATURE OF THE GENERATRIX IS OF THE SAME ORDER OF MAGNITUDES AS THE BOUNDARY LAYER THICKNESS.

UNCLASSIFIED

Acc. Nr: AT0043955 B Ref. Code: UR0000

PRIMARY SOURCE: Geofizicheskiy Sbornik, Kiev, 1970, Nr 33, pp 3-7

COMPUTATION OF GEOLOGICAL BODY POSITIONS ACCORDING TO GRAVITATIONAL ANOMALIES BY MEANS OF EDC

Ye. G. Bulakh

(Institute of Geophysics, Academy of Sciences, Ukrainian SSR)

Summary

The problem of determining the parameters of the geological objects is reduced to minimization of function of many variables.

A description is presented of two techniques for minimization based on the gradient methods. Realization of the computation circuit is possible only by means of electronic digital computers (EDC).

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REEL/FRAME
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1/2 013 UNCLASSIFIED PROCESSING DATE--

TITLE--DISCRIMINATING REGIONAL BACKGROUND IN INTERPRETING GRAVITY AND MAGNETIC ANOMALIES -U-

AUTHOR--BULAKH, YE.G.

B

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ZEMLI, NO 2, 1970, PP 95-99

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GRAVITY, GRAVITY ANOMALY, MAGNETIC ANOMALY, STRUCTURAL GEOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0697 STEP NO--UR/0387/70/000/002/0095/0099

CIRC ACCESSION NO--AP0110441

UNCLASSIFIED

2/2 013 UNCLASSIFIED

CIRC ACCESSION NO--AP0110441 PROCESSING DATE--090CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A KNOWLEDGE OF THE LEVEL OF THE NORMAL FIELD IS HIGHLY IMPORTANT IN INTERPRETING GRAVITY AND MAGNETIC ANOMALIES. IN THE OBSERVED FIELD IT IS NECESSARY TO DISCRIMINATE TWO COMPONENTS, ONE OF WHICH COULD CHARACTERIZE GEOLOGICAL INHOMOGENEITIES AND THE OTHER WHICH COULD CHARACTERIZE THE GENERAL REGIONAL BACKGROUND. IN MATHEMATICAL FORMULATION THE PROBLEM IS AS FOLLOWS. ASSUME THAT THE ANOMALOUS FIELD V(X,Y) SUBOBS IS STIPULATED (THIS CAN BE ANY GRAVITY OR MAGNETIC ANOMALY). IN THIS FIELD (N PLUS 1) POINTS WITH THE COORDINATES X SUBI, Y SUBI ARE STIPULATED. ON THE BASIS OF ALL INFORMATION ON GEOLOGICAL STRUCTURE, WITH THE FIELD TO BE INTERPRETED TAKEN INTO ACCOUNT, A GEOLOGICAL DIAGRAM IS CONSTRUCTED IN SUCH A WAY THAT THE ANOMALOUS EFFECT FROM IT CAN COMPUTED. ASSUME THAT IT IS V(X;Y) THEOR. THE REGIONAL BACKGROUND IS APPROXIMATED BY THE LINEAR FUNCTION V REG EQUALS A PLUS BX PLUS CY. THEN TWO GROUPS OF FUNCTIONS ARE FORMED V(X;Y) SUBOBS AND V(X;Y) SUBTHEOR PLUS A PLUS BX PLUS CY. ONLY THE COEFFICIENTS A, B, C WILL BE USED FOR DETERMINING THE GEOLOGICAL CROSS SECTION AND THE FIXED COORDINATES OF POINTS WITH VARIABLE PARAMETERS. THEY WILL BE DETERMINED USING THE MAXIMUM OF THE FOLLOWING EXPRESSION, (SHOWN ON MICROFICH). MINIMIZING OF THE FUNCTION F(A;B;C) AND DETERMINATION OF THE REGIONAL BACKGROUND PARAMETERS IS POSSIBLE BY THE METHOD OF DESCENT. THE SOUGHT FOR VALUES ARE DETERMINED BY SUCCESSIVE APPROXIMATIONS. APPLICATION OF THE FORMULAS IS ILLUSTRATED IN AN EXAMPLE. THE METHOD WAS CHECKED USING MANY THEORETICAL AND PRACTICAL EXAMPLES. FACILITY: GEOPHYSICAL INSTITUTE ACADEMY OF SCIENCES UKRSSR.

UNCLASSIFIED

USSR

UDC 535.34-15

BERTSEV, V. V., BULANIN, M. O., and KOLOMIYTSEV, T. D.

"Infrared Spectra of Cryosystems. I. Linear Molecules"

Leningrad, Optika i Spektroskopiya, Aug 73, pp 277-282

Abstract: Consideration is given to the possibilities of employing the spectroscopy of low-temperature condensed systems (cryosystems) for obtaining new information on the spectra and force field of molecules.

Liquefied gases such as argon, oxygen, and nitrogen are more inert than all the solvents usually employed in infrared spectroscopy. They are transparent in a wide spectral range and, consequently permit observation of the spectra of greatly diluted solutions in large optical layers. This compensates for the main drawback of liquefield gases as a solvent, namely their low solvent action. The spectroscopy of cryosystems is a valuable means for research, particularly in cases where it is not possible to resolve the fine rotational structure of the oscillatory bands.

Measurements were taken of the frequencies, half-widths, and intensities of bands in the infrared spectra of linear molecules (CO_2, COS, N_2O, and CS_2) in solutions of O_2 and Ar at 90°K, and a comparison was conducted with spectra in the gas phase. 5 tables. 14 references.

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USSR UDC 533.9:538.561

BULANIN, V. V., GOLANT, V. YE., and ZHILINSKIY, A. P.

"Instability of Decaying Plasma in a Magnetic Field"

Minsk, Kolebaniya i Volny v Plazme. (Oscillations and Waves in a Plasma), "Nauka i Tekhnika," 1971, pp 114-116

Abstract: Investigation of the diffusion of charged particles in a decaying plasma across a magnetic field showed that the diffusion coefficient depends substantially on the transverse dimensions of the plasma. The authors describe the experimental set-up and their investigations in containers of different dimensions in a uniform magnetic field up to 6000 Oe at a helium pressure from 0.08 to 0.15 Torr. The authors succeeded in establishing a strong dependence of the spectrum of the oscillations from 1 to 500 kHz on the diameter of the container, the magnitude of the magnetic field, and the pressure, as well as the existence of a critical magnetic field below which they were unable to observe any further oscillations in the potential. In conclusion, the authors make the point that the growth in amplitude of the oscillations when the diameter of the container with the plasma is decreased corresponds qualitatively to an increase in the coefficient of anomalous
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USSR

BULANIN, V. V., et al., Oscillations and Waves in a Plasma, "Nauka i Tekhnika," 1971, pp 114-116

diffusion when the transverse gradient of the charged particle concentration is increased. The article contains 2 illustrations and 3 bibliographic entries.

USSR

UDC 621.762.002.5(088.8)

BATRAKOV, P. D., BULANOV, A. A., BRIK, A. G., and KARTASHOV, A. I.

"Device for Mixing Viscous and Powdered Materials"

USSR Author's Certificate No. 266195, Filed 17/01/66, Published 24/07/70 (Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract No. 2 G471 P)

Translation: The device contains rotating shafts contacting cylindrical surfaces with cleaning scrubbers, mounted on a common support. In order to increase the product quality by repeated mixing, both shafts are connected to a cylindrical rotating drum with blades on the outside of the drum, articulated at the ends of the drum and connected by levers with rollers in a shaped slot in an end feeler installed on the support. The upper portion of the device carries a scraper in order to clean the blades of material accumulating on them, while the feeler is made in this area so that the entire working surface of the blade contacts the edge of the scrubber as it moves.

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BULANOV, V.V.

RAN/ IR-760 / [illegible]
Dec '72

29

Balakin, V. B., and V. V. Bulanov. Numerical solution to a problem on shock wave interaction with a cylinder in supersonic flow. I-FZh, v. 21, no. 6, 1971, 1033-1039. (RZhMekh, 5/72, no. 5B327)

A difference scheme of a second order of exactness is proposed for the calculation of the axisymmetric unsteady flow of an ideal gas. A numerical solution is obtained to the problem of a shock wave impacting a cylinder in supersonic flow. In the first stage of solution, the problem of streamline flow is solved by the method of adjustment. In the second stage the problem of shock interaction is solved. Pulsed pressure values were calculated for regimes with Mach numbers within the range of 1.5 to 5.

Antonova, A. M. High speed gas flow around a slender three-dimensional body. Trudy II Respublikanskoy konferentsii po aerogidromekhanike, teploobmenu i massoobmenu. Sektsiya "Aerodinamika bol'shikh skorostey". Kiyev, Kiyevskiy universitet, 1971, 99-102. (RZhMekh, 5/72, no. 5B340)

A formulation of the problem of flow around a slender body by a hypersonic gas is described. Within hypersonic theory of small perturbations, the problem can be reduced to the solution of a quasi-linear second-order equation in terms of partial derivatives of the hyperbolic type for a flow function in a plane of similarity variables. An iteration method of solving a Cauchy problem for this equation is proposed which reduces to an inverse problem for the flow around a slender pointed body with an attached shock wave.

USSR UDC: 533.9...16

BULANOV, S. V., SYROVATSKIY, S. I.

"Simple Models of Charged-Particle Acceleration in Layers of Neutral Current"

Leningrad, IV Leningr. mezhdunar. seminar "Yedinoobraziye uskoreniya chastits v razlich. masshtabakh kosmosa", 1972--sbornik (Fourth Leningrad International Seminar on the Uniformity of Particle Acceleration on Different Scales of the Universe, 1972--collection of works), 1972, pp 103-108 (from RZh-Fizika, No 6, Jun 73, abstract No 6G205 by A. Karkhov)

Translation: The paper deals with simple models of the dynamics of a thin layer of current and a plasma in its vicinity for the case of finite variations of the field or current in the layer. A description is given of the solution of two problems leading to situations in which strong electric fields arise and particle acceleration takes place. In the first problem the instantaneous dissociation of the current layer in the plasma is studied. The second problem deals with incidence of a finite-amplitude wave on the layer. It is shown that in the vicinity of neutral-current layers, under certain conditions, particles can be effectively accelerated (to practically unlimited energies in some instances).

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Materials

USSR UDC 669.01

BULANOV, V. YA., Candidate of Technical Sciences, DUL'KIN, G. S., Engineer, LEVIN, A. K., Engineer, MOSHKANTSEV, G. F., Graduate Student

"Wear Resistant Metal Ceramic Material Based on Naturally Alloyed Iron Powder"

Moscow, Izvestiya VUZ Mashinostroyeniye, No 8, 1970, pp 139-143

Abstract: One method of increasing the wear resistance of friction couples is natural alloying of a metal ceramic matrix. The authors studied the possibility of manufacturing iron powder from rolling scale of naturally alloyed type 17GS steel for the production of a metal ceramic alloyed iron-graphite porous material to be used for friction bearing surfaces. The properties of the powder produced are presented, as well as the properties of the metal ceramic material manufactured from the powder. The wear resistance of the material is compared to that of material manufactured from unalloyed iron powder. The wear resistance of the new material is higher, and the antifriction properties are also improved.

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USSR

UDC 621.762.669.018.29

BOGODUKHOV, S. I., BULANOV, V. Ya., and MOKSHANTSEV, G. F.

"Study of Properties of Certain Highly Alloyed Metal Ceramic Compositions Based on Powdered R18 Steel"

Nauka i proiz-vo [Science and Production -- collection of works], No. 4, Chelyabinsk, 1970, pp. 57-59 (Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract No. 2 G456 by G. Derkacheva)

Translation: The composition and technology of manufacture of four highly alloyed compositions based on powdered R18 steel filings are presented. The technology of heat treatment and strength properties of these compositions are compared to cast steel. 3 tables; 3 biblio. refs.

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USSR

UDC 621.762.002.5

MOKSHANTSEV, G. F., BULANOV, V. Ya., MIKHAYLICHENKO, A. V., and ROTMISTROVA, V. F.

"Experience in the Production of a Reducing Atmosphere From Compressed Propane-Butane Mixture and Its Utilization in Powder Metallurgy"

Nauka i proiz-vo [Science and Production -- collection of works], No. 4, Chelyabinsk, 1970, pp. 47-52, (Translated from Referativnyy Zhurnal — Metallurgiya, No. 1, 1971, Abstract No. 1 G501 by G. Derkacheva).

Translation: A compact laboratory gas reactor has been produced which can be used to perform various processes involved in the conversion of compressed propane-butane mixtures and their application for reduction and sintering of various metal powders. The operating principle of the reactor is described. Optimal modes are determined for complete conversion of the propane-butane mixture. The mixture produced is also recommended for heat treatment processes during heating of metals and alloys in controlled atmospheres. 4 figures; 6 tables.

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USSR UDC 621.762 [illegible]

BULANOV, [illegible], PAVLICHENKO, A. [illegible], [illegible], G. A., [illegible] and SEDAC[illegible], [illegible] A., Orsk-Khalilovov Metallurgical Combine

"Cermet [illegible] Based on Iron Powders from the Rolling Scale of [illegible] and 10KhSND Steels"

Kiev, Poroshkovaya Metallurgiya, No 7, Jul 7[illegible], pp 57-[illegible]

Abstract: Iron powders from the rolling scale of 17[illegible] [illegible] alloyed steels were produced by combined reduction. [illegible] to produce cermet test materials both with addition [illegible], in the form [illegible] S-c graphite, and without it. The principal properties [illegible] for [illegible] with the properties of [illegible] from powder of [illegible] composition produced by the same method. [illegible] the density of the specimens as a function of [illegible] shrinkage was studied in the process of sintering at [illegible] hydrogen atmosphere for 2 hours. The results show that an increase in [illegible] is followed by an increase in shrinkage for all specimens regardless of [illegible] sition [illegible] processing conditions. The tests for [illegible] bending [illegible] shear indicate that the tensile strength of materials [illegible]

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200510012-8"

USSR

BOLANOV, V. Ya., et al, [illegible]

alloyed iron powders [illegible] unalloyed iron powders. [illegible] with zero graphite content consist of alloyed ferrite with [illegible] higher than that in the ferrite of PZh2M; an increase in the graphite content in the initial mixture raises the amount of [illegible]. Additions of graphite above 2% result in cementite.

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USSR UDC 669.15.018.8:621.785.74

SHTEYNBERG, M. M., SMIRNOV, M. A., TOLSTOV, A. M., and BULANOV, YU. P.

"Effect of the Type of Thermomechanical Treatment on the Structure, Phase Composition and Strengthening of Kh18N10T Steel"

V sb. Povysh. konstruktivn. prochnosti staley i splavov (Increasing the Structural Strength of Steels and Alloys -- Collection of Works), No 2, Moscow, 1970, pp 202-207 (from RZh-Metallurgiya, No 3 Mar 71, Abstract No 3I599 by N. Kalinkina)

Translation: The effect of low-temperature thermomechanical treatment (LTMT), high-temperature thermomechanical treatment (HTMT), and thermomechanical treatment (TMT) on the structure and mechanical properties of Kh18N10T steel was studied. HTMT was performed at 1000°, LTMT at room temperature and 600°, and TMT at room temperature and 600° with subsequent heating at 600° for 100 hrs. In all cases deformation was effected by 12-15 and 25-28% rolling. X-ray diffraction analysis and electron microscope study by transillumination showed that with increased degree of deformation the dislocation density (DD) increases at all deformation temperatures. There is a slight decline in DD with a change from room temperature to 600°; there is a significant reduction in DDafter deformation at 1000°. Cold and thermal deformation gives

USSR

SHTEYNBERG, M. M., et al., Povysh. konstruktivn. prochnosti staley i splavov, No 2, Moscow, 1970, pp 202-207

rise to a cellular disloaction structure, which is more pronounced the higher the deformation degree. Deformation at 600° causes precipitation of finely dispersed TiC particles along the dislocations. Annealing of deformed specimens at 600° causes additional precipitation of the carbides TiC and $Cr_{23}C_6$, mainly on the dislocations. Cold 25-28% deformation increases $\sigma_{0.2}$ from 21 to 77 kg/mm^2, σ_B from 59 to 81.7 kg/mm^2. The same deformation at 600° increases $\sigma_{0.2}$ to 64 kg/mm^2 and σ_B to 75.5 kg/mm^2. Heating at 600° in TMT leads to a slight increase in steel strength. TMT increases the time to rupture at 650° and a stress of 18 kg/mm^2 sixfold as compared with hardening. This difference disappears at stresses of 14 kg/mm^2 or below. Two illustrations. One table. Bibliography with two titles.

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USSR

UDC: 616-036.882-092.9-036.81-008.921.1

BULANOVA, O. N., ZAKS, I. O., and NOVODERZHKINA, I. S., Laboratory of Experimental Physiology for Reanimation of the Organism, Academy of Medical Sciences USSR, Moscow

"Dynamics of the Acid-Base Equilibrium in the Restorative Period After Circulatory Arrest Induced by Asphyzia"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 13-16

Abstract: After 2½ and 6 min of clinical death induced in 24 dogs by mechanical asphyxia, reanimation was initiated with cardiac massage, injection of epinephrine, and forcing a small amount of blood into an artery. In some experiments, an equal amount of blood was suctioned from the right heart and artificial respiration was conducted. The dynamics of pH, pCO_2, and total organic acids was traced for 24 hours and the results compared with those obtained in earlier experiments in which death was caused by bleeding. Significant differences in these indices were observed only during the agonal stage and first few minutes of the post-reanimation period. Thereafter, uncompensated alkalosis and secondary hypoxia developed, regardless of the manner of death. The six animals in

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USSR

BULANOVA, O. N., et al, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 13-16

which blood was suctioned from the right heart revived after 6 min of clinical death, while none of the six other animals in which this procedure was not carried out survived. All of the animals exposed to anoxia for 12 min, 7 sec survived, but when the period of exposure was extended to 13 min, 42 sec all of the animals died. Even the relatively small time difference (1 min, 35 sec) was apparently sufficient to determine the possibility of restoration of functions.

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USSR

BULAT, M. S.

"Synthesis of State Tables of Excitation Functions of the Internal Elements of an Automaton"

Abstraktn. i Struktur. Teoriya Releyn. Ustroistv. [Abstract and Structural Theory of Relay Devices -- Collection of Works], Moscow, Nauka Press, 1972, pp 49-64 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V602 by the author).

Translation: The problem is studied of synthesizing the table of states of the excitation functions for the internal elements of an automaton based on a fixed code table of transitions of the automaton. The method suggested allows tables of functions dependent on a large number of variables to be used, and can be used for synthesis of any system of Boolean functions.

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USSR

UDC 539.37:539.40

BULAT, S. I., GRIGOROVICH, V. K., OSIPOV, V. G., and TIKHONOV, A. S., Moscow

"Ductility and Strength of Alloys in the Copper-Nickel Systems"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 157-161.

Abstract: Results are presented from an experimental study of the ductility and strength characteristics of copper-nickel alloys at the temperatures of hot deformation and at room temperature. The ductility and strength were studied in extension and during hot rolling. The greatest deformation resistance at room temperature is that of the alloy of copper with 60% nickel. As the temperature increases, this maximum is displaced toward the more refractory component -- nickel. The strength maxima correspond to the minima of relative reduction in area, elongation, and permissible reduction in rolling. These factors are interpreted from the thermodynamic standpoint.

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USSR

UDC 539.37:539.40

BULAT, S. I., GRIGOROVICH, V. K., OSIPOV, V. G., and TIKHONOV, A. S., Moscow

"Ductility and Strength of Alloys in the Copper-Nickel Systems"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 157-161.

Abstract: Results are presented from an experimental study of the ductility and strength characteristics of copper-nickel alloys at the temperatures of hot deformation and at room temperature. The ductility and strength were studied in extension and during hot rolling. The greatest deformation resistance at room temperature is that of the alloy of copper with 60% nickel. As the temperature increases, this maximum is displaced toward the more refractory component -- nickel. The strength maxima correspond to the minima of relative reduction in area, elongation, and permissible reduction in rolling. These factors are interpreted from the thermodynamic standpoint.

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USSR

UDC 539.4

BULAT, S. I., OSIPOV, V. G., TIKHONOV, A. S.

"Effect Which the Nature of Distribution of the Second Phase has on the Ductility of Kh18N10T Stainless Steel"

V sb. Protsessy formoizmeneniya met. i splavov (Processes of Deformation of Metals and Alloys--collection of works), Moscow, "Nauka", 1971, pp 137-140 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10V785)

Translation: It is experimentally established that the technological ductility of Kh18N10T stainless steel during rolling depends not only on the average content of the second phase, but also on the nature of the distribution of this phase through the cross section of the strip being rolled. Two cases of ferrite distribution through the cross section of a Kh18N10T steel strip are established: accumulation of ferrite in the central part and almost total absence on the surface of the strip; an insignificant quantity of ferrite in the center, and accumulation in the form of short lines on the surface of the strip. Authors' abstract.

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USSR UDC 621.77.016.2:669.14.018.8

BULAT, S. I., GINDIN, A. SH., MARKOVICH, V. I., and MEANDROV, L. V.

"Influence of Hot Rolling Mode on Structure of 0Kh17T Steel"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 145-150

Translation: Various modes of heating and rolling of 0Kh17T steel are studied on a semicontinuous mill. Experiments are performed, refining the mechanism of structure formation of high-chromium steel during hot rolling. Conditions of production of fine-grain structure and high plastic properties are determined. 4 tables; 5 biblio. refs.

1/1

Mechanical Properties

B

USSR UDC [illegible]

TIKHONOV, A. S., GRIGOROVICH, V. K., and BULAT, S. I., Institute of Metallurgy imeni A. A. Baykov, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Ductility and Strength of Nickel-Molybdenum Alloys at High Temperature"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, Nov 70, pp 68-69

Abstract: Hot deformation of alloys with a molybdenum content of over 30% is considered, and an investigation is made of the mechanical properties at temperatures of deformation. The maximum strength at low temperatures corresponds to the most heterogeneous two-phase alloy. The microstructure of alloy Ni+33% Mo at temperatures of the appearance of the effect of superductility can be described by a uniform distribution of finely dispersed inclusions of stable δ-phase in a plastic matrix of α-solid solution. Results of the investigation show that superductility can be observed not only in alloys of eutectic composition but also in heterogeneous alloys, whose structure is formed with the use of peritectic reaction.

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1/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EMERGENCE OF CHANNELS IN THE SPACE BEHIND THE SHAFT OF WELLS AFTER CEMENTING -U-

AUTHOR-(03)-BULATOV, A.I., OBOZIN, O.N., KUKSOV, A.K.

COUNTRY OF INFO--USSR

B

SOURCE--GAZOV. PROM. 1970, 15(2), 3-6

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SEAL, WELL DRILLING MACHINERY, CEMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/2040 STEP NO--UR/0492/70/015/002/0003/0006

CIRC ACCESSION NO--AP0122269

UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0122269
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SEDIMENTARY INSTABILITY OF THE SEALING SOLN., WHICH CAN CAUSE CHANNELING, ESP. WHEN THE WELL LINING BECOMES TWISTED, IS OVERCOME BY USE OF A SOLN. WITH LOW WATER LOSS. LAB. APP. FOR MEASURING SEDIMENTATION AND CHANNELING IS DESCRIBED.
FACILITY: KRASNODARSK, FILIAL VNIINEFT, KRASNODARSK, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200510012-8"

USSR UDC 512.25/.26+519.3:330.115

USHAKOV, I. M., BULATOV, B. G.

"Study of One Method of Solution of a Problem in Nonlinear Programming"

Sb. Nauch. tr. Chelyabinsk. Politekhn. In-ta [Collected Scientific Works of Chelyabinsk Polytechnical Institute], No 80, 1970, pp 16-23, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 B68S, unsigned).

Translation: Modeling of the gradient method on an analog computer.

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USSR

UDC:621.039.83

BULATOV, B. P. and TSYGANKOV, YE. I.

"Parameters of the Radiation Field Near an Installation for Irradiation of Agricultural Crops"

Moscow, Atomnaya Energiya, Vol 36, No 1, Jan 74, p 52

Abstract: The "γ-field" radiation device is designed for irradiation of agricultural crops under natural conditions during the vegetation period in order to produce initial material for selection. The device includes a Co^{60} source with an activity of 1660 Curies in a container 3.5 m above soil level. Semi-empirical formulas are presented, allowing the level of radiation around the device to be calculated with an error of not over 10%. The formulas are used to calculate the necessary height of protective dyke to be built around the research field as a function of desired effective radius of irradiation.

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USSR

UDC: 621.375.4.029.6

BULATOV, M. G., SHVARTS, N. Z.

"A Transistorized Microwave Limiter Amplifier"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 6, Jun 71, pp 1087-1090

Abstract: The paper presents the results of an experimental study of transistorized limiter amplifiers for the SHF band and methods of computer analysis of such amplifiers. The studies were done in the upper region of the decimeter wave band. The four units studied had initial amplifications of 27, 42, 60 and 70 dB on the linear section of the amplitude characteristic. Curves are found for the output power and the phase of the amplification factor as functions of the output power level. The change in phase of the amplification factor was no more than 40° throughout the entire dynamic range for any of the amplifiers studied. Two types of experimental transistors were used in the limiter amplifier: 1) a low-power "conventional" transistor designed for amplification of weak signals; 2) a transistor with low impurity concentrations in the collector region designed chiefly for operation in the direct AGC mode. This type of transistor shows a sharp reduction in gain with increasing collector current. The conventional transistors were used in the linear preamplification stages,

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BULATOV, M. G., et al, Radiotekhnika i Elektronika, Vol. 16, No 6, Jun 71, pp 1087-1090

and the AGC transistors were used in the final stages. The resultant [S]-matrix of a network of transistor stages is determined from the known power dependences of the S-parameters of the individual stages. The method of successive approximations is used. The authors thank G. G. Teletskiy for setting up the computer program for the calculations.

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1/2 010 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--SPECTROPHOTOMETRIC ANALYSIS OF MICROSAMPLES OF LEAD SULFIDE FOR MAIN COMPONENTS -U-
AUTHOR-(03)-STEPANOVA, A.N., BULATOV, M.I., ALESKOVSKIY, V.B.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 380-2

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROPHOTOMETRIC ANALYSIS, LEAD SULFIDE, MICROCHEMICAL ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1894 STEP NO--UR/0075/70/025/002/0380/0382

CIRC ACCESSION NO--AP0115713
UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0115713
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS SUGGESTED FOR THE SPECTROPHOTOMETRIC DETN. OF PB, S.PRIME NEGATIVE NEGATIVE AND SO SUB4 PRIME NEGATIVE NEGATIVE IN PBS. TO DET. S PRIME NEGATIVE NEGATIVE, ADD TO THE SAMPLE (0.1-0.35 MG) 10 ML 1N HCL AND PASS N FOR 15 MIN. BOIL AND PASS N FOR ANOTHER 45 MIN AT A RATE OF 50 ML-MIN. THE ABSORBER CONTAINS 10 ML OF A MIXT. (ZN ACETATE 43 G-L. AND NAOAC 7.5 G-L.) IN 30 ML H SUB2 O. AFTER STOPPING N PASSAGE ADD TO THE ABSORBER SOLN. 1 ML 0.4PERCENT P,AMINO,N,N,DIMETHYLANILINE IN HCL, 1.5 ML 0.4PERCENT FECL SUB3, AND 3 ML HCL, AND DIL. TO 50 ML WITH H SUB2 O. MEASURE THE ABSORBANCE OF THE METHYLENE BLUE AFTER 15 MIN AT 670 NM AND COMPARE WITH A CALIBRATION CURVE PREPD. FROM STD. NA SUB2 S SAMPLES. TO DET. PB, TRANSFER THE SAMPLE TO A 50 ML VOLUMETRIC FLASK AFTER EXPELLING THE H SUB2 S AND COOLING, ADD 5 ML OF A PH 10 AMMONIACAL BUFFER, THEN 2.25 ML 1 TIMES 10 PRIME NEGATIVE3 M 4,(2,PYRIDYLAZO)RESORCINOL, AND DIL. TO VOL. WITH H SUB2 O. MEASURE THE ABSORBANCE AT 516 NM AND COMPARE WITH READINGS OF STD. PB(NO SUB3) SUB2 SAMPLES. FACILITY: LENINGRAD TECHNOL. INST., LENINGRAD, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200510012-8"

Electromagnetic Wave Propagation

USSR

UDC 621.371.25:621.391.242

BULATOV, N. D., SAVIN, YU. K.

"Methods of Countering Polarized Fading of High-Frequency Signals"

Moscow, Elektrosvyaz', No 9, 1970, pp 29-32

Abstract: This article considers three methods of reception designed to combat fading and describes experimental research on the problem. A transmitter was used which radiated pulses of 150-microsecond and 20-minute durations, the former to determine the multiradiation and the presence of magnetoionic wave components at the reception point and the latter an unmodulated carrier, from a dipole antenna over several frequencies. The receiver antenna consisted of two mutually perpendicular dipoles of the BG 15/12 type. A block diagram and description of the receiver equipment are given. Transmissions were made over distances varying from 50 to 1000 km at various hours of the day and seasons of the year, with observations made on six to ten frequencies over periods of 10-12 days for each distance range investigated. The results of the research are given in the form of a table of energy gain in dB for the different times of the day, and curves showing the effectiveness of the three methods researched. The authors express their gratitude to Ye. A. Khmel'nitskiy for his valuable advice.

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1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--AGE SPECIFIC DIFFERENCES OF THE CATALASE ACTIVITY AND CONCENTRATION HEMOLYSED BLOOD PROTEIN IN PATIENTS WITH A SEVERE COURSE OF BRONCHIAL

AUTHOR-(04)-BULATOV, P.K., KOMOV, V.P., MAKSIDOVA, A.O., BERGER, R.G.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 5, PP 78-80

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--RESPIRATORY SYSTEM DISEASE, BLOOD CHEMISTRY, HEMOLYSIS, CATALASE, BIOLOGIC AGING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0474 STEP NO--UR/0504/70/042/005/0078/0080

CIRC ACCESSION NO--AP0121148

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121148

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDIED THE ACTIVITY OF CATALASE AND PROTEIN CONCENTRATION OF HEMOLYSED BLLOD IN PATIENTS WITH A SEVERE COURSE OF BRONCHIAL ASTHMA. THERE WAS SEEN A SHARP FLUCTUATION IN THE ENZYMATIC ACTIVITY AND PROTEIN CONCENTRATION DEPENDING UPON THE PHASE OF THE DISEASE AND THE PATIENT'S AGE. THE AUTHORS ASSUME THAT THE CHANGES OF THE CATALASE ACTIVITY ARE CAUSED ON THE ONE HAND BY A GENERAL PATHOLOGY OF TISSUELAR RESPIRATION AND ON THE OTHER ONEBY CERTAIN COMPENSATORY FUNCTIONS OF THE ORGANISM.

FACILITY: KAFEDRA POSPITAL'NOY TERAPII I LENINGRAD. MEDITSINSKOGO INSTITUTA IM. I. P. PAVLOVA. FACILITY: KAFEDRA BIOKHIMII LENINGRAD. KHIMIKO-FARMATSEVTICHESKOGO INSTITUTA.

UNCLASSIFIED

USSR

UDC: 621.373.029.7.001.5

MALYSHEV, V. A. and BULATOV, R. I.

"Analyzing Nonlinear Characteristics of Four-Level Quantum Systems With Double Pumping"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1612-1617

Abstract: This paper deals with the problem of investigating the nonlinear characteristics of quantum systems with double pumping and compares them with the analogous characteristics of systems with single pumping. The problem is examined in connection with four-level quantum systems, with consideration of the fact that double pumping may be realized by the same quanta or by the quanta of two different energy levels corresponding to the levels of the $1 \rightleftharpoons 3$ and $2 \rightleftharpoons 4$ transitions. The difference in populations at the levels of the different transitions is computed, and the double-pumping characteristics are analyzed on the basis of expressions describing the nonlinear characteristics for the $1 \rightleftharpoons 3$ transition. It is found that the already known results of investigating nonlinear operation in single-pumping systems can be extended to the double-pumping systems, and that the presence of second pumping with the $2 \rightleftharpoons 4$ transition always leads to an increase in the upper limit of the dynamic range for quantum amplifiers.

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USSR

UDC 621.382.233

MALYSHEV, V. A., BULATOV, R. I., and LAVRUK, I. T., Taganrog Radio Engineering Institute

"Effect of Low Magnetic Field on Drift Motion of Charged Particles"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 69-72

Abstract: An earlier article by V. A. MALYSHEV obtained a differential equation of averaged drift motion and considered various particular cases of its solution. The present article gives a generalization of results obtained in the earlier article for the case in which there is a low, constant magnetic field with induction B situated at an arbitrary angle θ to the direction of electric field E, along which the drift motion is studied. The smallness criterion of field B is determined by mathematical simplifications which are made and reduces to smallness of cyclotron frequency as compared with collision frequency.

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Acc. Nr: AP0036436 B Ref. Code: UR 0213

PRIMARY SOURCE: Okeanologiya, 1970, Vol 10, Nr 1, pp 38-47

K. V. MOROSHKIN, V. A. BUBNOV, R. P. BULATOV

WATER CIRCULATION IN THE SOUTHEASTERN ATLANTIC

Summary

Experimental studies were carried out during the 3rd cruise of the R/V «Akademik Kurchatov» to verify the hypothesis by V. G. Bogorov, V. N. Stepanov and R. P. Bulatov who suggested the cyclonic character of water circulation resulting in the high biological productivity in the eastern parts of the tropical zones of the oceans. A detailed hydrological survey with long-term current measurements at buoy stations have revealed a large-scale tropical cyclonic gyre existing between 10 or 20 m and 300 m depths under a very thin surface wind-driven current. Its northern periphery is formed by the South Equatorial counter-current between 5° and 9° S latitudes with 30 to 50 cm/sec velocities. Near the African coasts this counter-current changes into the Angola current with the maximum velocities of about 50 cm/sec between latitudes 9° and 16° South. The Angola current penetrates as deep as 250 to 300 m below the surface and embraces both the shelf and the continental slope. South of the area under study, the Benguella

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REEL/FRAME 19721280

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current turns to the west and has the width from 200 to 300 miles and the maximum velocity of about 15 or 20 cm/sec. There are three streams in the Benguella current running along the shore as far north as 13—14° S latitude. The interaction of the second northern stream of the Benguella current with the Angola current forms a divergence zone along 11° E longitude between 17° and 13° S latitudes. The quasi-stationary anticyclonic curl in the upper 100 m layer with the center at 7°30′ S latitude and 9°30′ E longitude has been found to the south-west of the Congo River mouth.

D. 71.

19721281

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USSR UDC: 621.396.6-181.48

TARABRIN, B. B., NISSEL'SON, L. I., BULATOV, T. A.

"Parametric Series of Integrated Microcircuits"

Elektron. promst'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 1, pp 34-36 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V244)

Translation: The paper takes up problems of standardizing the main parameters of microcircuits with regard to their functional peculiarities. Resumé.

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USSR

UDC 532.529.5/.6

BULATOV, V. M.

"Experimental Study of the Collision of Liquid Pairs"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1971, No. 54, pp 68-75 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3B545)

Translation: A photographic study was made of the collision of liquid drops with a plane surface of quiescent liquid of infinite thickness. The formation of a crater was studied upon the collision of the following liquid pairs: water-water, oil-water, sugar solution-water, glycerin-water. It was observed that the process of the formation of a crater for colliding pairs, the viscosity of which differ by several orders of magnitude, occurs differently than in the collision of equally viscous pairs. In the first case the maximum diameter of the crater is formed not at the interface of the two media but at a certain depth. 8 ref. A. P. Prolov.

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USSR UDC 541.126.2:546.16:546.11.022

BULATOV, V. P., VEDENEYEV, V. I., GERSHENZON, YU. M., DEMENT'YEV, A. P., and SARKISOV, O. M., Institute of Chemical Physics, Academy of Sciences USSR

"The Non-Linear Mechanism of Spontaneous Combustion in the Reaction Between Fluorine and Deuterium"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 557-559

Abstract: Previously it had been determined from the isothermal spontaneous combustion of phosphorus in fluorine that the vibrationally-excited deuterium molecules bring about branching in this reaction. In this study, the influence of the external initiation of active centers in the limit of the spontaneous combustion reaction between fluorine and deuterium is determined. The reaction mixture was composed of O_2:D_2:F_2 in the ratio of 5.5:1:1 at a pressure of 1 torr. A plot of the rate of radical accumulation as a function of temperature shows an abrupt change at T = 590°K. Increasing in reaction time 2.7-fold did not significantly change the disruption temperature. The value of T decreased with increasing partial pressure of fluorine at a constant total pressure, and also with an increase in the total pressure, and increased on addition of small amounts of CO_2. Previously it had been shown that the 1/2

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BULATOV, V. P., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 557-559

contributions of the nonlinear phases are essentially related to the experimental conditions determining the competition of the rates of branching according to the following paths -- (1) $D_2(v = 1) + F_2 = D + DF + F$; and (2) $D_2 (v > 1) + F_2 = D + DF + F$ -- by the ratio of the constants $k_2/k_1 \approx \exp 9000/RT$ and that of $[D_2]$ $(v > 1)/ [D_2]$ $(v = 1)$. It was concluded that the lower limit of spontaneous combustion $F_2 + D_2$ is related to the rate of production of active centers. The expansion of the region in which this reaction occurs on external initiation confirms the nonlinear mechanism of branching presented above.

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USSR UDC 539.4:621.791

BULATOV, Yu. V., YEROKHIN, A. A., and LOSEVA, G. I., Moscow

"Fractographic Analysis of Hot Cracks in Nickel Alloy Weld Seams"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 72, pp 95-100

Abstract: For investigation of hot crack formation in nickel alloy weld seams by fractographic analysis the following materials were used: EI435 nickel alloy (≤ 0.12% C, 19-23% Cr, ≤ 0.7% Mn, ≤ 0.8% Si 0.4% Ti (max) and ≤ 0.2% Al; an experimental Ni-Nb-Al alloy (≤ 0.04% C, 10-11% Nb, 5-6% Al, 0.15% Ti (max), 0.13% Fe). Comparison of data on the resistance of EI435 alloy to hot crack formation and fractographic analysis of the crack surface indicated that crack nucleation occurs in the solid-liquid state which is contradictory to the widely expressed opinion about the subsolidius nature of hot cracks in Ni-Cr alloys. Fractographic analysis of the experimental nickel alloy showed that cracks form in the solid state. Electron fractograms of the cracks showed that fracture occurs as intergranular failure of second phase particles without significant traces of plastic deformation. The experimental alloy is a precipitation hardening

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200510012-8"

USSR

BULATOV, Yu. V., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 72, pp 95-100

alloy with the phase γ' (Ni_3Al) primarily precipitated along the grain boundaries, which is the principal cause of hot crack origination. 2 figures, 12 bibliographic references.

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USSR UDC 621.791.011:620.192.4:669.245:669.28:669.046.52

LOSEVA, G. I., Engineer, and BULATOV, YU. V., Candidate of Engineering Sciences

"Effect of Alloying Alloy E1435 With Molybdenum on Its Resistance to Hot Crack Formation"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 73, pp 51-52

Abstract: An industrial heat of Ni-Cr alloy E1435 was produced, with 10, 16, and 22% molybdenum added, for studying the effect of alloying on resistance to hot crack formation by a method developed jointly by the Institute of Metallurgy imeni A. A. Baykov and the Central Scientific Research Institute of Ferrous Metallurgy. By this method the following items were determined as shown in the table: a--temperature interval of brittleness; b--deformation capability of the seam metal in this temperature interval and c--critical rate of deformation.

	a, °C	b, mm	c, mm/min
E1435	50	0.03	1.8
E1435+10% Mo	50	0.04	2.4
E1435+16% Mo	40	0.06	4.0
E1435+22% Mo	40	0.07	5.3

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USSR

LOSEVA, G. I and BULATOV, YU. V., Svarochnoye Proizvodstvo, No 3, Mar 73, pp 51-52

Tests also showed that the lower boundary of the temperature interval of brittleness was close to the actual solidus temperature. It was found that in the cast structure of alloy E1435 there occurs migration of grain boundaries formed during crystallization. The grain boundaries in Ni-Cr-Mo alloys develop independently of the molybdenum content. The deformation capability of the seam metal and critical rate of deformation are increased with increased Mo content. Tests showed that cracks in alloy E1435 with no Mo and with 10% Mo are formed in the solid-liquid state close to the solidus. Also Mo decreases intergranular slippage in the seams of Ni-Cr alloys. 3 figures, 1 table, 3 bibliographic references.

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USSR

UDC: 8.74

ALEKSEYEV, V. Ye., BULATOVA, I. G., SAVEL'YEV, A. Ya.

"Description of the 'Avtor' Language"

Kiev, Mat. i inform. probl. prognozir. i upr. naukoy--sbornik (Mathematical and Informational Problems in the Prediction and Control of Science--collection of works), 1971, pp 123-136 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V629)

Translation: The paper describes the "Avtor" automatic programming language. A unit of action in the language is an operator. The basis of recording is a sequence of events separated by a symbol (virgule). Attached to the sequence of events are a question in which the student is given a problem in addition to an explanation, and a marked "wait" operator. Such a combination of question, "wait" operator and sequence of events is called a topic in the "Avtor" language. The instructors program is a sequence of topics. The Backus notation is used to describe the structure of the language. A fragment of recording of academic information in the "Avtor" language is presented.

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USSR

UDC 8.74

ALEKSEYEV, V. YE., SAVEL'YEV, A. YA., BULATOVA, I. G.

"Determining the requirements on the AVTOR Input Language"

V sb. Mat. i inform. probl. prognozir. i upr. naukoy (Mathematical and Information Problems of Forecasting and Control of Science--collection of works), Kiev, 1971, pp 136-146 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V445)

Translation: The requirements on the AVTOR input language in which the exchanged messages between the instructor, the people and the training complex are written or defined. The most important requirements are the following: 1) the language must be simple, generally intelligible and close to the natural language, for example, the language of mathematics; 2) the language must so far as possible evaluate any answers by the student; 3) the language must permit introduction of any changes into the training programs, that is, correction of them as the instructor desires and also checking for correctness of writing of the training programs. The set of symbols available on the Consul electric typewriter was selected as the input language alphabet. A study was made of the rules for writing messages which are exchanged between the instructor and the student with the training complex. The AVTOR language is constructed by the interpreting program principle. Three types of operators are used in it to write the correct answers: the answer, the keyword and the range of numbers. For each

USSR

ALEKSEYEV, V. YE., et al., Mat. i inform. probl. prognozir. i upr. naukoy, Kiev, 1971, pp 136-146

question there is one correct response operator, several operators of the foreseen incorrect answers, the operator for an unforeseen incorrect answer and also the "assistance" and "prompting" operators. The consolidated block diagram of the master program executing the AVTOR language is presented.

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USSR UDC 616.322-002.1-079.4:[616.931+616.931-008.97

FAYERMAN, N. N., GALUNINA, Z. I., BULATOVA, N. I., ZAKHAR'YEVSKAYA, N. S., and KULIKOVA, V. V., Gorki Medical Institute and Gorki Institute of Epidemiology and Microbiology

"Differential Diagnosis of Diphtherial Tonsillitis in Carriers of Diphtheria Bacilli"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 42-46

Abstract: In order to confirm the correctness of a diagnosis of "tonsillitis + diphtheria carrier state" and differentiate such tonsillitis from the atypical forms of diphtheria prevalent today, 521 hospitalized patients were kept under clinical observation. The dynamics of the titer of diphtheria antitoxin in the blood were studied and the titers of agglutinins and anti-O-streptolysin were studied. Low antitoxin titers in the acute period of the disease and 30- to 50-fold increase in antitoxin titers during convalescence confirmed the diagnosis of diphtheria. An increase in anti-O-streptolysin in the absence of shifts in the antitoxin titer implied a streptococcal etiology of the tonsillitis. The isolation of diphtheria

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USSR

FAYERMAN, N. N., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 42-46

bacilli at this time suggested an accompanying bacteria carrier state. Bacteriological diagnosis of diphtheria can be hastened by the use of human embryo fibroblasts. Diphtheria toxin in nasopharyngeal washings can be detected in such cultures within 24 to 48 hours.

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USSR

UDC 547.752

VINOGRAD, L. KH., SHALYGINA, O. D., BULATOVA, N. N., KOSTYUCHENKO, N. P., ZYKOVA, T. N., MIKERINA, A. L., ARUTYUNYAN, G. S., and SUVOROV, N. N., All-Union Scientific Research Chemical and Pharmacentical Institute imeni Sergo Ordzhonikidze, Moscow

"Indole Derivatives. Report 72. Addition of Sulfur-Containing Reagents to Nitrovinylindole"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 12, Dec 71, pp 15-17

Abstract: The addition of sulfur-containing nucleophilic reagents to unsaturated nitro-compounds of the indole series was studied. The addition reactions of seven new indole derivatives are detailed and the addition products identified. In-vitro therapeutic tests revealed a weak germistatic activity (500-250 mcg/ml) in 1-benzylmercapto-1-(1'-acetylindolyl-3)-2-aminoethane chloralhydrate relative to 17 microorganism strains. The study included general effects, effects on smooth muscles, circulation and respiration body temperature, interaction with hexenal and iprazid, antihistaminic, antispasmodic and anesthetic effects. The compound revealed weak pharmacological activity, weak spasmogenic action and slightly increased capillary permeability. It appears to promote the somnifacient effect of hexenal. The LD_{50} in intravenous administration to mice is 45 mg/kg. (1 table, 1 biblio. reference)

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TITLE--LATTICE PARAMETERS AND ELECTRICAL PROPERTIES OF GALLIUM ARSENIDE
SELENIDE AND APTCA HEAT TREATMENT -U-

AUTHOR-(05)-KUZNETSOV, G.M., BARSUKOV, A.D., KANDYBA, O.I., VOLKOVA, G.M., BULATOVA, O.S.

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BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE LATTICE PARAMETER OF UNDOPED GAAS ON CURRENT CARRIER CONCN. WAS INVESTIGATED. A SHARP DECREASE IN THE LATTICE PARAMETER IN THE CONCN. REGION OF (0.7-3) TIMES 10 PRIME15-CM PRIME3 WAS OBSD., WHICH IS ASSOCD. WITH AN INCREASE IN THE VACANCY CONCN. BY 1.44 TIMES 10 PRIME19-CM PRIME3. BY MAKING USE OF THE PREVIOUSLY REPORTED DATA, THE AT. VOL. OF THE VACANCIES IN GAAS WAS DETD. IT IS 0.767 RELATIVE TO THE AV. VOL. OF THE ATOM, WHICH IS IN GOOD AGREEMENT WITH THE RESULTS OF THE D. MEASUREMENTS. THE DEPENDENCE OF THE LATTICE PARAMETER AND THE ELEC. PROPERTIES OF GAAS ON AS VAPOR PRESSURE, P SUBAS, DURING THE ANNEALING PROCESS WAS INVESTIGATED. AT P SUBAS GREATER THAN 2 ATM THERE IS OBSD. AN INCREASE IN THE LATTICE PARAMETER BY 1 TIMES 10 PRIME NEGATIVE4 ANGSTROM, CORRESPONDING TO THE DECREASE IN THE VACANCY CONCN. BY 1 TIMES 10 PRIME19-CM PRIME3. THE CARRIER CONCN. IN SAMPLES SUBJECTED TO ANNEALING AT 700DEGREES FOR 7 HR DEPENDS ON THE P SUBAS AND IT INCREASES WITH INCREASING P SUBAS. ANNEALING AT P SUBAS GREATER THAN 2 ATM LEADS ALSO TO A SYSTEMATIC INCREASE IN THE CARRIER MOBILITY (TO 25PERCENT). FACILITY: MOSK, INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 621.793:661.183.2:541.183

BULATOVA, R. F., KOGAN, V. S., KUZIN, I. A., and LOSKUTOV, A. I.

"Low-Temperature Adsorption on Metallized Carbon"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLIV, No 1, Jan 71, pp 217-219

Abstract: Metallizing of active carbon at room temperature and normal atmospheric pressure produces a considerable increase in its thermal conductivity, with only a slight deterioration in its adsorption capability.

SKT carbon with full and partial copper metallizing was tested under cryovacuum conditions to determine if the above effects appeared there as well.

It was found that partially metallized SKT carbon granules are the most effective for use in cryovacuum devices using any considerable thickness of sorbent. Time required for establishment of adsorption equilibrium remains practically constant with this type of carbon for layer thicknesses from 2 up to 30 mm. Adsorption capacity for $P = 1 \cdot 10^{16}$ mm Hg and $T = 20.4°$ is independent of layer thickness.
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USSR UDC: 615.361.419.014.413

DATSENKO, B. M., BULATOVA, R. F., PUSHKAR', N. S., ITKIN, Yu. A., KOGAN, V. S., and KOZ'MIN, Yu. V., Ukrainian Institute for the Advanced Training of Physicians, Ministry of Health USSR, and Physico-technical Institute, Academy of Sciences Ukrainian SSR, Kharkov

"Mechanism of the Protective Action of Polyethylene Oxide on Bone Marrow Cells Freezing to -196°C"

Moscow, Problemy Gematologii i Perelivaniya Krovi, Vol 15, No 11, Nov 70, pp 32-37

Abstract: X-ray diffraction analysis and low-temperature crystallography showed that little polyethylene (as compared to glycerin) penetrates bone marrow cells frozen to -196°C. The bulk of the substance remains outside, forming a coating around the cells, and hence exerts a protective effect. Electron microscope study of erythrocytes present in the frozen bone marrow cells revealed many cavities formed as a result of intracellular crystallization. The size of the pieces of ice increased from the periphery to the center, where a large ice crystals were sometimes found. In the light of the suggested mechanism of action of

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DATSENKO, B. M., et al, Problemy Gematologii i Perelivaniya Krovi, Vol 15, No 11, Nov 70, pp 32-37

polyethylene oxide, the increased number of crystals in the erythrocytes from the periphery to the center is considered to be the result of a quantitative decrease in the cryophylactic agent in the cells in the same direction.

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UDC 576.851.555.098.345.4

IVANOVA, L. G., BLAGOVESHCHENSKIY, V. A., and BULATOVA, T. I., Institute of Epidemiology and Microbiology imeni Gamaleya, USSR Academy of Medical Sciences, Moscow

"Carbohydrate Composition of Type A Cl. Botulinum Belonging to Different Serological Groups"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1973, pp 98-103

Abstract: Ion exchange column chromatography and paper chromatography were employed to investigate the carbohydrate composition of two serologic strains (98 and Memphis) of Cl. botulinum type A. Culture media did not have an effect on their carbohydrate composition and both strains contained glucose, glucosamine, ribose. However, strain Memphis differed from strain 98 in that it contained muramic acid, and a higher concentration of glucose and an unidentified neutral sugar than did strain 98.

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USSR UDC 615.272:576.851.553].012.8

BLAGOVESHCHENSKIY, V. A., RESHETNIKOVA, L. N., BULATOVA, T. I., and PEROVA, Ye. V., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

"Purification and Concentration of Cl. botulinum F Toxoid"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 22-25

Abstract: Highly immunogenic toxoids can be obtained by a 2-stage method of purification and concentration. Primary purification is achieved by precipitating grude toxoid with 1 N hydrochloric acid in the isoelectric zone after adding 15% NaCl. Secondary purification involves repeated precipitation of the toxoid with 1 N hydrochloric acid in the isoelectric zone after adding NaCl (for toxoids prepared on casein media) or by precipitating it in the cold with 1 1/2 parts chilled acetone (for toxoids prepared on fish media). White mice immunized once with the purified and concentrated toxoids (5 toxoid binding units) survived the injection of 5000 MLD of type F toxin.

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